

## Chapter 2- Cases of edentulous jaw – Cases involving whole of the jaw

1. A case study that achieved occlusal recovery in whole of the jaw after an accident by replacing the lost teeth with implants and prosthesis placement to the natural remaining teeth.

Director of Matsumoto Dental Clinic

Yasugi Matsumoto

Patient: 49 year-old male

First admission: May 2003

Chief complaint: Teeth lost and damaged in an accident. Inability to chew.

This patient arrived at the clinic to request prosthesis cover to the entire jaw, due to teeth lost in an accident.

The external wounds from the accident had already been treated in his previous visits to the hospital. Those teeth that were deemed not able to be preserved were extracted. Implants bodies were then planted in several batches. Adjustments were made to those teeth which were left remaining with prosthetics to correct the occlusal balance.

The occlusal recovery and stability was achieved as a result of this treatment, and gained patient satisfaction from the improvement in QOL. He has been visiting the clinic for a regular check up and cleaning.

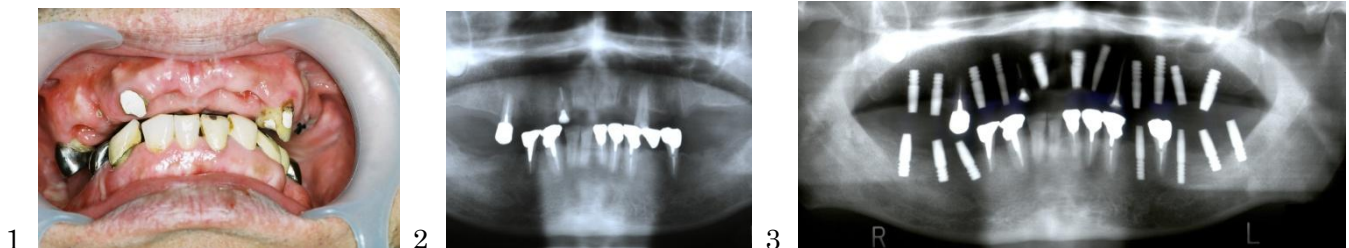


Image-1: Image of the oral cavity at the time of primary medical examination.

Image-2: Panoramic radiograph at the time of primary medical examination.

Image-3: Panoramic radiograph after the implant body installation



Image-4: Image of the mandible at the time of impression taking.

Image-5: Image of the maxilla at the time of impression taking.

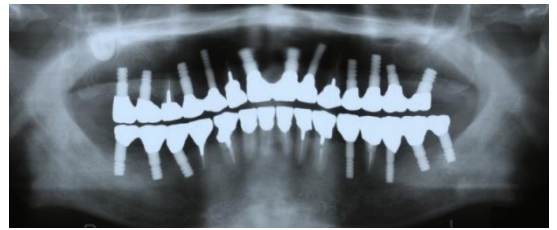
Image-6: Image of the oral cavity after the placement of superstructure.



7



8



9

Image-7: Image of the mandible after the placement of superstructure.

Image-8: Image of the maxilla after the placement of superstructure.

Image-9: Panoramic radiograph after the placement of the superstructure.



10



11

Image-10: Image of the oral cavity four years later.

Image-11: Image of the mandible four years later.



12



13

Image-12: Image of the maxilla four years later.

Image-13: Panoramic radiograph four years later.

## 2. A case where occlusal recovery was achieved with whole jaw implants to the upper and lower jaws

General Manager of Department of Dentistry, Oral and Maxillofacial Surgery, Mitsui Memorial Hospital  
Yasuhiko Tsuyama

Immediate loading becomes problematic when implanting to whole of the upper and lower jaws. In such cases, occlusal recovery had been achieved by implanting to various portions of the oral cavity in batches. This had required long treatment periods - as long as a year or more, therefore a task had been set in an attempt to shorten this.

Here, we present a case whereby occlusal recovery was able to be achieved in three days by employing AQB one-piece and T-type implants installed.

Patient: 63 year-old male

Chief complaint: Inability to chew, request to fix this problem with means other than the placement of artificial dentures.

Medical history: Nothing to note

Current symptoms: A bridge with natural teeth as anchors had been fixed to the anterior teeth of the maxilla, but had become mobile and problematic. In the mandible, No. 26 and No.30 were left remaining, but have become extremely loose and mobile.

Image-1 shows the state of intraoral cavity. Image-2 shows the panoramic radiograph of the state before surgical intervention.

The insufficient vertical bone quantity, as short as 1 mm, found in the maxilla molar regions on both sides suggested that the usual implantation method would not be suitable. The examination of the maxillary sinus manifested no signs of congestion and showed a clear baseline of the maxillary sinus, confirming an absence of any pathological conditions.

In the past, the sinus-lift procedures in these cases would have used iliac bone transplants to secure sufficient bone quality to facilitate implantation. Many of these became associated with problems such as increase in the extent of surgical invasions, and lengthening of treatment period. This example shows that these issues were able to be overcome by using AQB one-piece implant.

On day one of the implant treatment, ten AQB implants were installed into the mandible, under local anesthesia. Although No. 27 and No. 28 teeth were required to be extracted, these were left intact for the time being with the aim of protecting the implants, and to restore vertical occlusion. Image-3 features the oral cavity after AQB one-piece implant was installed, and immediately loaded with crown structure. The patient was directed to be on liquid diet. Image-4 features the panoramic radiograph after the implantation procedure.

A week later, implant was installed into the anterior section of the maxilla with immediate loading method. Sinus-lift procedure was conducted to the maxillary molar region without using bone transplant or artificial bone transplant to facilitate implantations of 12 AQB T-types.

Image-5 features the sinus lift procedure and installation of T-type implant to the right side of the maxilla. Image-6 features the left side of the maxilla during the surgical procedure. The temporal crown was placed immediately after implant installation (Image-7).

A period of two months was left before No.27 and 28 were extracted, and replaced with AQB one-piece

implants to complete all the implantation procedures (Image-8). Image-9 features the oral cavity after the final superstructures were placed.

Image-10 shows the panoramic radiograph after a year since the implantations. In the area surrounding implants on the maxillary molar region, opaque smears can be observed, indicating the regeneration of bone. Bone resorption cannot be seen in the area surrounding the implants, and a satisfactory progress thus far can be observed.



Image-1: Image of the oral cavity before surgery

Image-2: Panoramic radiograph before surgery

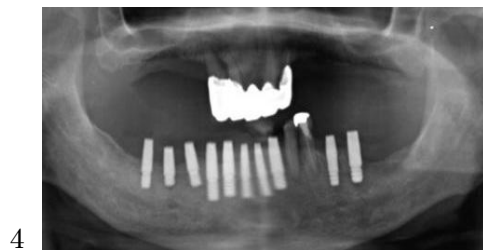


Image-3: Crown structures were placed immediately after the installation of implant bodies.

Image-4: Panoramic radiograph after the installation on the mandibles



Image-5: Image of the oral cavity at the time of installation of AQB T-type implants to the right maxilla, having undergone sinus-lift procedures.

Image-6: Image of the oral cavity during surgery

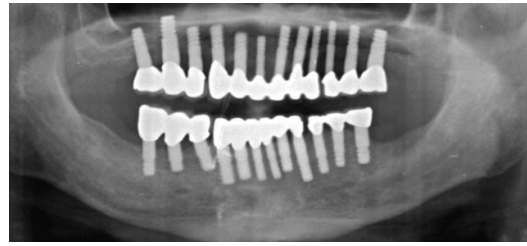


Image-7: Image of the oral cavity at the time of placement of superstructure, immediately following implantation into the maxilla.

Image-8: Panoramic radiograph post-surgery.



9



10

Image-9: Image of the oral cavity after the placement of the superstructure.

Image-10: Panoramic radiograph after a year since surgical procedure



### 3. A case of implant installation to whole of the maxilla, in unison

Head of Oral and Maxillofacial Surgery, Tokushukai Group

Assistant Director of Tokyo West Tokushukai Hospital

Tsuguo Sano

The patients with edentulous jaw have often had to welcome the use of artificial dentures in their everyday life. Even with the rise in the number of implant usages, problems such as the need for two-time surgery with the use of two-stage type implants and construction of implant dentures have persisted therefore not allowing us to escape from the use of artificial dentures. The introduction of AQB one-piece type that facilitates rapid initial stabilization, allowing an early placement of temporal crowns, has enabled whole jaw to be replaced.

A case is presented here in which only one-stage type would have been able to solve the issues which would not have been achievable otherwise with two-piece type.

Patient: 60 year-old male

First admission: June 2004

Chief complaint: Unstable denture.

Treatment plan: Implants to the maxilla to be installed all in one session. Place the temporal crown a week later. Replace with a permanent superstructure within a short period after.

The panoramic radiograph before implant installation is shown (Image-1).

First, implant bodies of size 5SS were inserted into positions, No. 13, 14 and 15. Impression was taken two weeks later. Temporal crown was fabricated within a month of implantation, and was placed on the implant bodies. Concurrently, implants of sizes, 3LL, 4MS, 4MS, 5SS were installed to the positions, No. 27, 28, 29 and 30, respectively (of which implant was inserted into position No. 27, immediately following its tooth extraction). The temporal crowns to these were placed after a space of a month. This completed the mandible teeth.

The implants to the maxilla were planned to be installed in unison. The implants to the positions No. 2 to 15 were implanted under local anesthesia in the principal operating room. Conduction anesthesia was induced with 1.8 ml×5 ampules injected under the periosteum, after which the mucoperiosteal flap was detached as one, exposing the bone for clear visualization before implanting: 4MM, 4MS, 4MS, 4MS, 3LL, 3LL, 3LL, 3LL, 3LL, 3LL, 4MS, 4MS, 5MS, and 4MM all within 65 minutes. The implants were inserted to the median teeth on the anterior, i.e. No. 8 and 9, followed by to the positions in the order: No. 10, 11; 6, 7; 12, 13; 4, 5; 14, 15; 2, 3. The incision was temporarily stitched up with size 4-0 absorbable suture.

The positions of the implant installation sites had been planned on the model beforehand, however, practically, the positions were decided upon direct examination of the bone, and the final positioning were fixed after undergoing minute adjustments to derive at the position that would provide the most stability. I believe the best means to determine the position is to consider it in terms of three-dimensional orientations (above, below, front, behind, left, right).

Impression was taken immediately after the implantation, and the temporal crowns were constructed and placed within a week from surgery. The patient was instructed to consume liquid diet only for the week till the placement of the temporal crown. The final hybrid superstructure was placed to both the

maxilla and the mandible, two months after surgery. There have not been any problems such as bone resorption or masticatory dysfunction, and therefore patient has been satisfied.

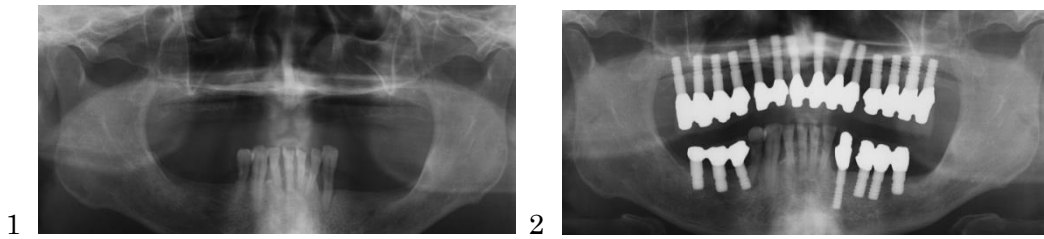


Image-1: Panoramic radiograph at the time of primary medical examination.

Image-2: Panoramic radiograph, 5 years later

#### 4. A case of implant installation immediately following extraction.

Head of Oral and Maxillofacial Surgery, Tokushukai Group  
Assistant Director of Tokyo West Tokushukai Hospital  
Tsuguo Sano

Implant treatment where there are teeth still remaining, it was generally believed that the best way would be to leave time after the tooth extraction for the bone to heal itself naturally before the implantation. This healing time is not necessary for AQB Implant system that exhibits the ability to induce osteogenic factors. The implant is able to rapidly fuse with the bone, concurrently and at the same rate as healing of the extracted tooth socket. Natural bone healing has been known to occur even without the application of bone filling agents that are usually added to aid the healing process of the wound, after tooth extraction. In order to ensure a smooth operation, we must be aware of the infection risks, and to avoid lateral pressure to be exerted onto the superstructure, it is essential to ensure stability of the healthy teeth surrounding the treatment area. Provided that no infection focus is present and that sufficient bone quantity can be secured, it should be possible to implant straight after the tooth extraction procedure.

We present here a case where it has been made possible by the one-stage type that would not have been achieved otherwise with a two-piece type.

Patient: 75 year-old female

First admission: May 2005

Chief complaint: Wanted to be able to enjoy her meals.

Treatment plan: Provide the means for the patient to be able to chew after a short treatment period, with the insertion of the implant, immediately following teeth extraction. Implant initially to the mandible, then to the maxilla, using the immediate loading after tooth extraction, and capped by temporal crown to exert pressure, to provide relief from the use of artificial dentures.

The panoramic radiograph before implantation is featured (Image-1). An artificial denture was fixed on top of remaining tooth root therefore the patient could not chew without feeling the pain.

The treatment was initialized from the mandibles in order to utilize the occlusal height of the artificial maxillary denture. To the right side of the mandible positions No. 23, 21, 20, 19 were inserted with implants of sizes: 3LM, 4MS, 4MS, and 5SS, respectively. To the left of the mandible, 4MS, 4MS, 4SS, and 4SS were inserted. These were placed with temporal crowns, and the maxillary teeth were treated in the month following the mandibular implantation. The implantation was conducted all at once under local anesthesia, starting from the median towards the lateral positions. The orientations of the implants were determined with consideration to the occlusion: above, below, front, behind, left and right.

The sizes implanted were 5MM, 5MM 5MS, 4MS, 3LM, 3LM, 3LM, 3LM, 3LM, 4MM, 4MM, and 4MM from No. 18 to 30 position. Impression was taken after implantation, followed by the placement of the temporal crowns, and the final superstructure was fabricated two months later, once the osseointegration of the implant bodies could be confirmed, since implantation. The patient was instructed to consume liquid diet only for the week till the placement of temporal crown. The hybrid superstructure was fixed



three months after the implant body installation, timing of which was determined with careful clinical observation of the conditions. Image-2 features the panoramic radiograph of the oral cavity 4 years later. With no signs of bone resorption, the patient has been satisfied with the substantial improvement in the masticatory function, and with the ability to eat whatever she likes.

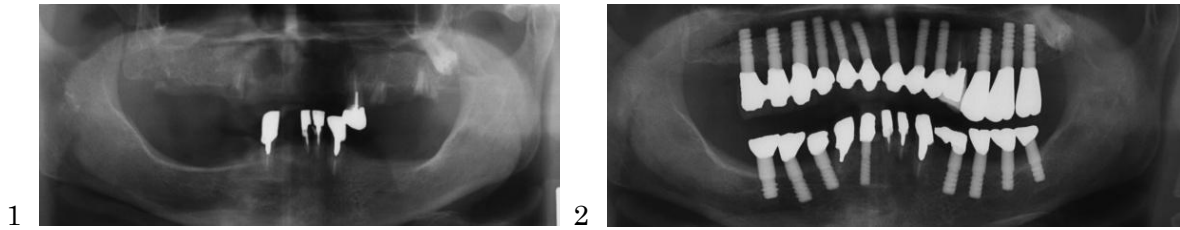


Image-1: Panoramic radiograph before implant installation

Image-2: Panoramic radiograph, 4 years later

**5. A case where one-piece type has been used for immediate loading after tooth extraction, and immediate loading to an edentulous jaw.**

Head of Matsumoto Dental Clinic  
Yasugi Matsumoto

In cases where the implantation to the whole of a jaw is conducted, prosthesis method becomes an issue till osseointegration is established. The common solution to overcome this problem has been to install two-piece type in two stages, and then place with an artificial denture. Even with the aid of softening agent inserted as a mediator, the free movement of the denture can exert pressure on the implant body, hindering the integration process.

Here is a case in which one-piece type implants were installed into whole jaw structure, and the provisional crown set on the same day.

Patient: 66 year-old female  
First admission: April 2008  
Chief complaint: Cannot chew

Implant body was inserted into all of the parts with missing teeth on the maxilla, and a full denture type provisional crown was set on the same day. Then the teeth that were deemed no longer of any use were extracted to which the implant bodies were inserted, followed by the placement of a full denture type provisional crown, all on the same day. The integration period was observed with respect to the provisional full denture.

The occlusion was able to be achieved on the day of the surgery. With no manifestation of abnormal symptoms, it was possible to retain the high level of patient QOL. Once the osseointegration of both maxilla and mandible had been established, impression was taken to fabricate the superstructure.

As the temporary superstructure, to a metal frame, hybrid ceramic crowns were added, completing the structure. The progress was monitored for several months, and once confirming that there were no problems with the design, it was permanently fixed onto the abutment.

Its condition is assessed during the regular check up, alongside regular cleaning.

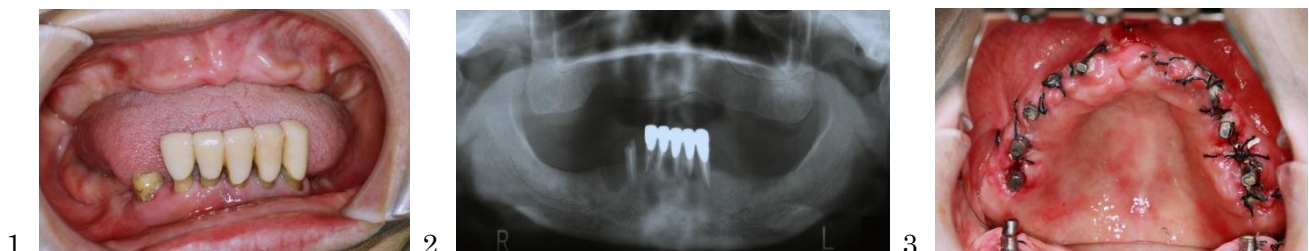
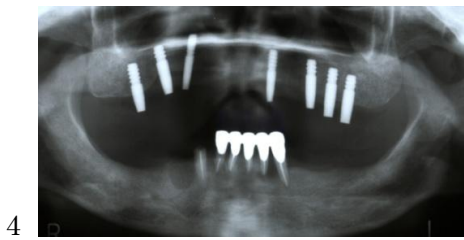


Image-1: Image of the oral cavity at the time of primary medical examination.

Image-2: Panoramic radiograph at the time of primary medical examination.

Image-3: Image of the maxilla after the implantation.



4



5

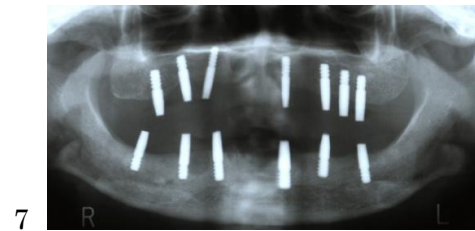


6

Image-4: Panoramic radiograph of the maxilla after the implantation.

Image-5: Image of the maxilla once the provisional has been set.

Image-6: Image of the oral cavity from the front once the provisional has been set.



7



8



9

Image-7: Panoramic radiograph after implantation to the mandible.

Image-8: The metal frame for the maxilla.

Image-9: Trial insertion of the metal frame



10



11



12

Image-10: Fabricated Esthena (from above).

Image-11: Fabricated Esthena (from the front).

Image-12: Building up with the color of the gingivae.



13



14



15

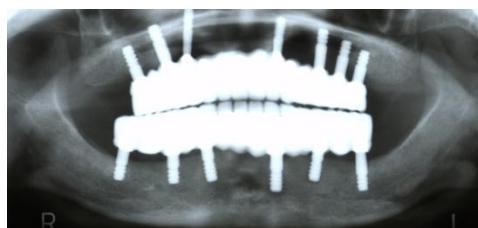
Image-13: The fabricated crown was set on the maxilla.

Image-14: Image of the mandible at the time of impression taking.

Image-15: Trial insertion of the metal frame.



16



17



18

Image-16: Image of the oral cavity after the superstructure has been set on the mandible.

Image-17: Panoramic radiograph after the superstructure has been set.

Image-18: Image of the oral cavity 5 months later.